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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,668	08/05/2003	Cullen F. Jennings	062891.1110	7154

7590 01/03/2007

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EXAMINER	
YUN, EUGENE	
ART UNIT	PAPER NUMBER
2618	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/634,668	JENNINGS, CULLEN F.	
	Examiner	Art Unit	
	Eugene Yun	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Bartkowiak et al. (US 5,809,133).

Referring to Claim 1, Bartkowiak teaches a method for detecting a received signal comprising:

determining a set of particles each modeling a potential signal generated by a transmitter (see col. 3, lines 26-36);

measuring a received signal from the transmitter (see col. 5, lines 59-67);

calculating a probability for each of the particles, the probability for a particle indicating likelihood of the potential signal modeled by the particle based upon the received signal (see col. 3, lines 1-5);

redistributing the particles within a space of potential signals that may be generated by the transmitter based upon the probabilities (see col. 3, lines 40-55);

selecting one of the particles based upon the distribution of the particles within the space of potential signals (see col. 13, lines 20-25); and

outputting the potential signal modeled by the selected particle (see col. 14, lines 56-60).

Claims 19 and 28 have similar limitations as claim 1.

Referring to Claim 10, Bartkowiak teaches a receiver comprising:

a memory maintaining data detailing a space of potential signals that may be generated by a transmitter (see col. 6, lines 53-55);

a distribution module operable to determine a set of particles each modeling a potential signal from the space of potential signals and to redistribute the particles within the space of potential signals based upon probabilities for each of the particles (col. 3, lines 40-55);

a probability module operable to measure a received signal from the transmitter and to calculate a probability for each of the particles, the probability for a particle indicating likelihood of the potential signal modeled by the particle based upon the received signal (see col. 3, lines 1-13 and lines 37-40); and

a signal selection module operable to select one of the particles based upon the distribution of the particles within the space of potential signals and to output the potential signal modeled by the selected particle (see col. 13, lines 20-25 and col. 14, lines 56-60).

Referring to Claims 2, 11, and 20, Bartkowiak also teaches measuring, calculating, and redistributing for a plurality of iterations, wherein over the course of the iterations, at least some of the particles converge upon a particular signal within the space of potential signals (see col. 11, lines 19-29).

Referring to Claims 3, 12, and 21, Bartkowiak also teaches determining that the concentration of the particles within a particular portion of the space of potential signals

exceeds a threshold concentration, and in response to determining that the concentration exceeds the threshold concentration, selecting the one of the particles from within the particular portion of the space of potential signals (see col. 4, lines 10-21).

Referring to Claims 4, 13, and 22, Bartkowiak also teaches measuring, calculating, and redistributing for a plurality of iterations, wherein each of the iterations provides information for a portion of each of the potential signals modeled by the particles (see col. 11, lines 19-29).

Referring to Claims 5, 14, and 23, Bartkowiak also teaches each of the potential signals modeling a sequence of values, and wherein each of the iterations provides measurements directed to a particular value from the sequence (see col. 18, line 62 to col. 19, line 3).

Referring to Claims 6, 15, and 24, Bartkowiak also teaches the sequence of values characterized by an error correction code, the method further comprising selecting the one of the particles based upon the distribution of the particles within the space of potential signals and the error correction code (see col. 17, lines 36-45).

Referring to Claims 7, 16, and 25, Bartkowiak also teaches monitoring processing resources to determine available ones of the processing resources, and determining a number of the particles to assign to signal detection based upon the available processing resources (see col. 20, lines 1-12).

Referring to Claims 8, 17, and 26, Bartkowiak also teaches determining a number of the particles to assign to signal detection based upon an assigned quality of service level (see col. 17, lines 36-45).

Referring to Claims 9, 18, and 27, Bartkowiak also teaches performing the steps of measuring, calculating, and redistributing for a plurality of iterations, wherein for each of the iterations, the step of redistributing removes unlikely ones of the particles and multiplies likely ones of the particles such that the number of particles in each of the iterations remains constant (see col. 11, lines 19-29).

Response to Arguments

3. Applicant's arguments filed 10/5/2006 have been fully considered but they are not persuasive.

The applicant argues that the Bartkowiak reference does not teach "determining a set of particles each modeling a potential signal generated by a transmitter". In the newly cited passage by the examiner, the examiner equates the particles to the digital samples (col. 3, line 27) and also stating that the digital samples model the "received signal" (col. 3, line 27), which can equate to the potential signal. It is believed that from more clearly pointing out what represents the particles and the potential signal, the Bartkowiak reference teaches "determining a set of particles each modeling a potential signal generated by a transmitter".

The applicant argues that the Bartkowiak reference does not teach "calculating a probability for each of the particles, the probability for a particle indicating likelihood of

the potential signal modeled by the particle based upon the received signal". For the reference to teach the above limitation, the actual term "probability" does not necessarily need to be stated in the reference. According to the specification the probability in the claims determines the "likelihood that a received signal matches to the particles selected by distribution module". The cited passage in the Bartkowiak reference determines the highest energy values for selected particles by using the Goertzel algorithm, and since the device in the reference selects only the particles with the higher energy values, the above stated function can equate to determining the likelihood that a received signal matches to the particles selected by the distribution modile.

The applicant argues that the Bartkowiak reference does not teach "redistributing the particles within a space of potential signals that may be generated by the transmitter based upon the probabilities". According to the claims, this limitation takes place before the selecting of the particles takes place. Therefore, it should be obvious to one skilled in the art, that the particles are redistributed and analyzed before a selection takes place. However, the cited passage (see col. 3, lines 40-55) also shows the process of analyzing all the energy calculations taking place before selection is made of the samples with the highest energy values. Therefore, the above function can also equate "redistributing the particles within a space of potential signals that may be generated by the transmitter based upon the probabilities".

For the above reasons, the examiner stands by his rejection.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Yun whose telephone number is (571) 272-7860. The examiner can normally be reached on 9:00am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571)272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eugene Yun
Examiner
Art Unit 2618

EY

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PATENT EXAMINER/TELECOMM.

12/13/06